

REMARKS

Applicant filed an Amendment on November 17, 2005. In response, an Advisory Action was issued on November 25, 2005. The Advisory Action indicated that the proposed Amendment, filed on November 17, 2005, raised new issues that would require further search and consideration. As a result, a Request for Continued Examination was filed on December 2, 2005. In addition, the Advisory Action indicated that the proposed Amendment raised the issue of new matter. This paper is being filed in response to the Advisory Action's comments. Applicant respectfully requests reconsideration of the above-referenced application in light of the November 17, 2005 Amendment and these following remarks.

The Advisory Action states that "Applicant has not disclosed the use of a dielectric layer in previous versions of claims nor has pointed out where in the specification is a reference to dielectric layers." (p. 2). Applicant respectfully submits that the specification provides adequate support for the presence of dielectric layers in an image sensor and image sensor pixel.

For example, in FIG. 3, one exemplary embodiment of a CMOS pixel 100 is illustrated. FIG. 3 provides a photoresist 122, transparent insulating layer 22, and a thin dielectric layer 114, which is also described in Applicant's specification on p. 9, ¶34. A "first metal layer 116 is deposited over thin dielectric layer 114 and plug 24 (FIG. 5)." (Applicant's specification, p. 10, ¶36). A photoresist 118 is formed on metal layer 116 and apertures are formed in the metal layer 116 after a photolithography step (FIG. 7). A metal mesh filter 124 with apertures 122 is the result. Consequently, Applicant's specification *and* drawings provide adequate support for the presence of a dielectric layer, *i.e.*, element 114 in FIG. 3.

The Office Action further indicates that “the usage of a dielectric layer would be obvious because such would prevent any hazardous effects of transferred charges by placing the metallic filter close to the *photoconversion device*.” (p. 2) (emphasis added). Claims 1-81 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over JP 62278432 A (“Hoshi”), *i.e.*, a single reference.

Applicant respectfully submits, however, and as discussed in the Remarks section of the Amendment filed on November 17, 2005, Hoshi does not teach or suggest an image sensor pixel or its method of formation having a dielectric layer formed over a photoconversion device, and a mesh optical filter formed over the dielectric layer and photoconversion device. The present invention relates to a *solid-state* imager sensor having arrayed pixel cells, and methods of formation.

Hoshi, in contrast, relates to a plasma light detector having a radio wave filtering structure. One filter, *i.e.*, element 3, is used to cut off *noise* signals generated by radio waves. The other filter is a copper mesh filter 2 used for cutting off short wavelength light. However, Hoshi does not teach or suggest a *solid-state image sensor*: it is a radio wave filtering structure for detecting plasma. The fact that Hoshi’s device is used for filtering radio waves is further confirmed by element 4 which is described as an “*antenna*.” (Abstract) (emphasis added). For example, Hoshi discloses that the “light receiving element 4 is used as an *antenna*.” (Abstract) (emphasis added).

As indicated above, the present invention relates to a solid-state imager with *pixel cells* having a *photosensitive region*. Hoshi discloses a plasma light detector having a radio filtering structure consisting of two filters. Hoshi does not teach or suggest an image sensor having a photoconversion device. As such, it would not be obvious to incorporate a dielectric layer into such a structure over the photoconversion device.

Further, a structure, as disclosed in Hoshi, that is used to detect plasma light with a single light detector and which filters for radio waves using an antenna is not reasonably pertinent to problems associated with solid-state imager devices, such as CMOS or CCD imaging devices. Applicant's field, solid-state imaging devices, and Hoshi's field, a plasma light detector which filters radio waves with an antenna, involves entirely distinct problems and solutions. Therefore, nothing commends looking at or modifying Hoshi's structure to obtain the claimed invention. See M.P.E.P. § 2141.01(a).

Still further, "[a] statement that modifications of the prior art to meet the claimed invention would have been 'well within the ordinary skill of the art' at the time the claimed invention was made because the [reference] relied upon teach that all aspects of the claimed invention were individually known in the art is *not sufficient* to establish a *prima facie* case of obviousness without some objective reason to combine the teachings of the references." M.P.E.P. § 2143.02. There must be some motivation to incorporate a dielectric layer into Hoshi's structure. Applicant respectfully submits that there is none. In short, structures and methods pertaining to the formation of a plasma sensor which filters radio waves would not be pertinent to the claimed invention.

In view of the above comments, and the Amendment filed on November 17, 2005, each of the presently pending claims in this application is believed to be in immediate condition for allowance. Accordingly, the Examiner is respectfully requested to review and pass this application to issue.

Dated: December 7, 2005

Respectfully submitted,

By 

Thomas J. D'Amico

Registration No.: 28,371

James R. Derry

Registration No.: 57,890

DICKSTEIN SHAPIRO MORIN &

OSHINSKY LLP

2101 L Street NW

Washington, DC 20037-1526

(202) 785-9700

Attorneys for Applicant